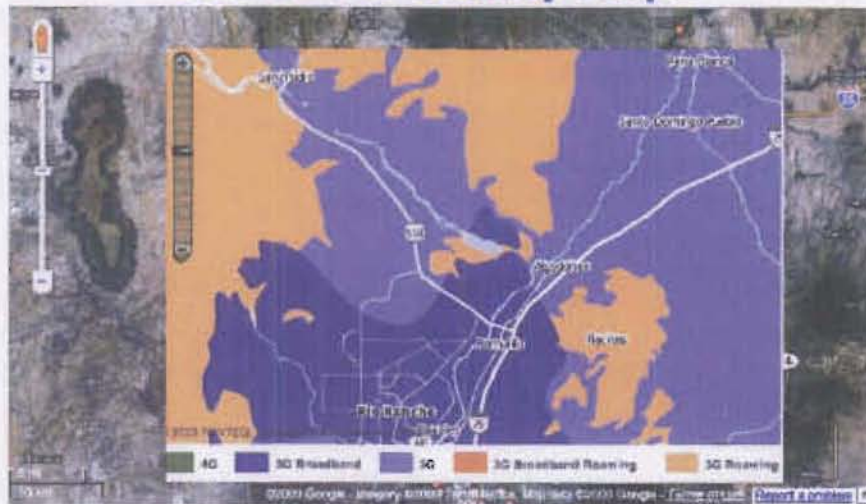


Sandoval County Maps



Digital Health Group

Intel Confidential



Sandoval County

Communication	Connection	Expectations	Issues
Hospital to Hospital	High Speed Broadband Available	IT communications between institutions should be adequate	IT communications between institutions should be adequate
Hospital (or medical clinic) to Patient Home Communication (Telemedicine)	High speed broad band available in all areas of the county through 3G.	Communications of minimal patient information will be available. No video conference between hospital and the home or remote clinics.	Telephone lines would be used for biometric data, behavioral data, ADL information, PERS in those areas prompting slow response times
Ambulance to Hospital (or medical clinic) Communication	High speed broad band available in all areas of the county through 3G.	Communications of minimal patient information will be available. No video conference between hospital and the mobile services.	Communication in remote areas will be available but slower speeds and limited information flow.
Hospital to Remote Clinic or Pharmacy (assisted living, etc..) Communication	High Speed Broadband Available	IT communications between institutions should be adequate	IT communications between institutions should be adequate

Digital Health Group

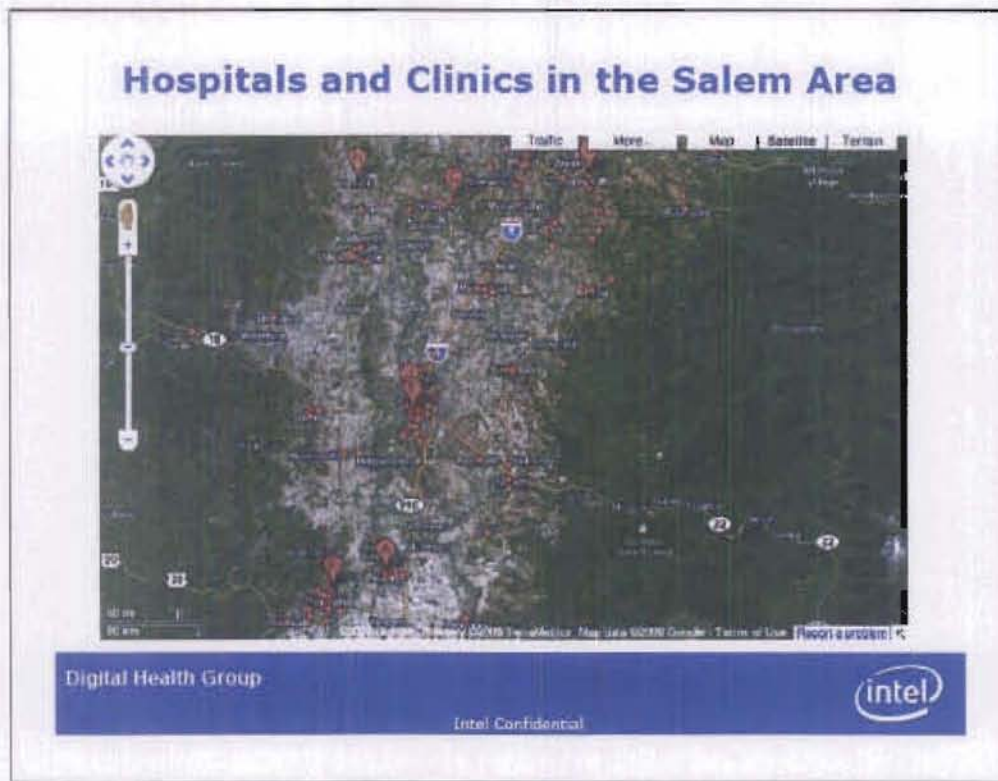
Intel Confidential



2.3 Chronic Care Patients in Marion and Polk Counties, Oregon

Marion and Polk Counties have a population of 347,214. Within these counties the three prominent ethnic groups are: Caucasians (271,353); Hispanics (54,522); and Asians (5,517). Of the 124,699 households reporting, 122,601 had phone service.³ Approximately 1.6 percent of Marion County's population of 314,606 (from 2008 US Census Estimates) are American Indian or Native Alaskan. There is one Indian health clinic in Salem, Oregon--The Regional Indian Health Center, Chenawa Indian Health Center.

There are seven hospitals within Marion and Polk Counties, which are noted in the map below.



Based on data from the 2007 MEDPAR file, Intel determined the number of individuals discharged from hospitals within Marion and Polk Counties in 2007 with the same five

³ Centers for Disease Control and Prevention, SNAPS Data, <http://www.bt.cdc.gov/snaps/data/41/41047.htm> and <http://www.bt.cdc.gov/snaps/data/41/41053.htm>.

chronic diseases used in the analysis for Sandoval County. Although the discharge data includes residents of both Marion and Polk Counties as well as neighboring communities, the chronic disease patients treated in 2007 totaled 11,140 with 63 percent of individuals returning to their homes.

The MEDPAR data for hospitals within 50 miles of Marion and Polk Counties shows the following patient counts for these five conditions:

Oregon – Hospitals With In 50 Miles of Select Zip Codes

Conditions	Patient Count	Patients Discharged Home/self care (routine charge)	Percent Discharged Home/self care (routine charge)
Asthma	817	530	65%
CHF	4,535	2,531	56%
COPD	1,645	995	60%
Diabetes	2,239	1,352	60%
Hypertension	2,674	1,654	62%
Unduplicated Total	11,140	7,062	63%

Source: Dobson | DaVanzo Analyses of Center For Medicare and Medicaid Services (CMS), Medicare Provider Analysis and Review (MEDPAR) File for 2007

The total Medicare reimbursement for these patients in 2007 was \$87,222,517 or \$7,830 per patient.

Target Conditions in Oregon Hospitals Within 50 Miles of Selected Zip Codes

Conditions	Patient Count	Total Charges	Covered Charges	Reimbursement Amount
Asthma	817	\$16,987,727	\$16,918,057	\$5,338,924
CHF	4,535	\$97,838,873	\$97,659,998	\$36,221,583
COPD	1,645	\$34,181,738	\$33,960,373	\$13,194,138
Diabetes	2,239	\$52,768,419	\$52,549,694	\$17,689,145
Hypertension	2,674	\$61,595,963	\$61,394,956	\$20,552,084
Unduplicated Total	11,140	\$247,975,809	\$247,087,210	\$87,222,517

Source: Dobson | DaVanzo Analyses of Center For Medicare and Medicaid Services (CMS), Medicare Provider Analysis and Review (MEDPAR) File for 2007

If the same calculation is used for Marion and Polk Counties as was used in the earlier example with Sandoval County, Intel anticipates that 30 percent of chronic care patients

returning home could benefit from remote patient monitoring. Based upon the success of the Department of Veterans Affairs' program, if 20 percent of the patients could avoid hospital readmissions, **Medicare spending could be reduced as much as \$3,296,430 annually.**

Chronic care hospitalizations	%Patients Returning Home	# of patients returning home	% remote patient monitoring	# of patients connected	20% hospital readmissions prevention
11,140	63	7018	30%	2,105	421

2.4 Salem and Marion/Polk Counties Broadband - Penetration and Requirements for Health Care Applications

As before, Intel compared the various wireless communications modes for Salem, Oregon and the surrounding Marion/Polk Counties. From the picture below, the penetration of high speed broadband, which covers the City of Salem, is apparent. However, Marion and Polk Counties are sparsely covered. It is challenging to achieve broadband penetration in Marion and Polk Counties due to the area's heavy forestation and rural demographics.



Most health care applications are enabled throughout Salem. In the Counties, the accessibility to POTS service only restricts patients from the use of real time video conferencing. To provide for the complete range of services, 4G wireless technology would appear to offer the most cost efficient solution.

Unlike Sandoval County discussed previously, the greater Salem area is surrounded by dense forests. These forests limit the penetration of wireless services due to line of sight issues. The density of the forest in the more remote regions of the Counties could be the reason for the lack of coverage.

Once again the four connection models were tested in the Marion/Polk Counties greater area. The results are shown in the table below.

Salem and Marion County			
Communication	Connection	Expectations	Issues
Hospital to Hospital	High Speed Broadband Available	IT communications between institutions should be adequate	IT communications between institutions should be adequate
Hospital (or medical clinic) to Patient Home Communication (Telemedicine)	High speed broad band available in most urban areas of the county, expecting most rural area to have limited bandwidth or no coverage	Communications of minimal patient information will be available.	Video conferencing will only be available to those in the urban areas. Telephone lines would be used for biometric data, behavioral data, ADL information, PERS in those areas prompting slow response times
Ambulance to Hospital (or medical clinic) Communication	High speed broad band available in most urban areas of the county, expecting most rural area to have limited bandwidth or no coverage	Complexity of coverage areas will mean the mobile solutions may use multiple platforms for communication or none in rural areas	Video conferencing will only be available to those in the urban areas. Telephone lines would be used for biometric data, behavioral data, ADL information, PERS in those areas prompting slow response times
Hospital to Remote Clinic or Pharmacy (assisted living, etc.) Communication	High Speed Broadband Available	IT communications between institutions should be adequate	IT communications between institutions should be adequate
Digital Health Group		Intel Confidential	

2.5 Health IT Value Capture & Use Cases

From patient records to clinical reference materials, health care runs on information. More than five years ago, Intel's Digital Health Group collaborated with health care leaders worldwide to remove roadblocks to the successful adoption of health care through development of the Intel HIT value model, which is an open source document. Best practices and key measures are developed, including the following performance indicators: patient safety, quality of care, patient access, staff productivity, staff satisfaction, revenue enhancement, and cost optimization.

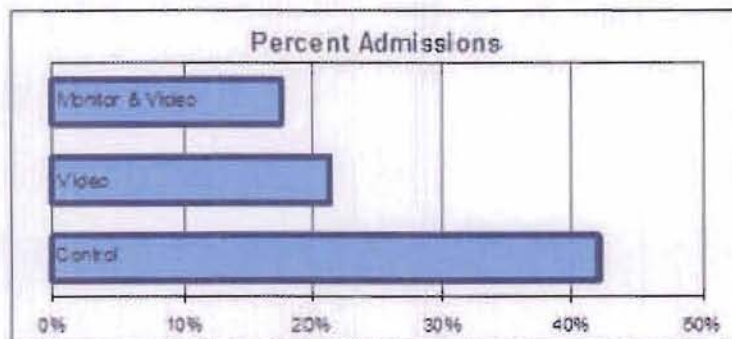
For more specifics on the HIT value model, case studies and white papers are attached in the appendix. We would also direct you to the Mobile Point of Care study, specifically, since Business Week in its December 9, 2009 edition ranked the Intel Mobile Clinical Assistant 13 in its list of 25 products that might change the world.

2.6 Remote Monitoring Value Proposition

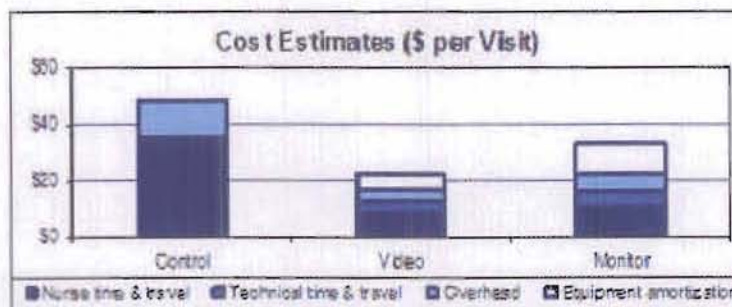
Telehealth and remote patient monitoring can provide value to the overall health care system as it becomes incorporated into health care delivery. These services can enhance the public health system by providing real-time information in emergency medical situations including pandemics. The full capacity for telehealth and remote patient monitoring to enhance the health care system should be viewed in the context of an aging population more prone to living longer with illnesses and a health care system while facing a shortage of health care providers, particularly primary care providers and nurses, in both inner city and rural areas.

Telehealth and remote patient monitoring produce positive health outcomes, result in increased savings for the health care system, and allow aging individuals with chronic diseases to remain in their own homes for an extended period of time. Pilot programs, which study and evaluate the use of these telehealth technologies, have proven both anecdotally and scientifically that the use of remote patient monitoring benefits individuals and the health care system as a whole.

In a randomized controlled trial, patient outcomes, satisfaction, and cost for individuals receiving traditional home health care and home care by telemedicine were compared. Over the course of two and a half years, 53 individuals were divided into three groups: a control group; a video intervention group; and a monitoring intervention group. Those in the control group received traditional home health care; those in the video intervention group received traditional home health care and two virtual visits a day (i.e. two-way audio and video communication between the patient and a nurse); and the monitoring intervention group received all of the care listed above in addition to physiologic monitoring and use of an e-diary to capture and report symptoms and measurements. The study revealed that *home health care delivered via telemedicine can result in better outcomes at a lower cost than traditional face-to-face interactions*. In an article, entitled "Home Telehealth Improves Clinical Outcomes at Lower Cost for Home Healthcare," S.M. Finklestein, S.M. Speedie, and S. Potthoff reported their findings, which include the following cost assessments:



Finkelstein, S.M., Speedie, S.M., Potthoff, S., "Home telehealth improves clinical outcomes at lower cost for home healthcare".
"Telemedicine and e-Health, December 2006, pp 128 – 136.



Finkelstein, S.M., Speedie, S.M., Potthoff, S., "Home telehealth improves clinical outcomes at lower cost for home healthcare".
"Telemedicine and e-Health, December 2006, pp 128 – 136.

A number of other telehealth studies conducted over the past decade point to significant findings for using remote patient monitoring to reduce readmissions. The results of some of these studies are noted below:

- Experience at the Department of Veterans Affairs and research studies have shown that virtual care for chronic disease is an important strategy for reducing rehospitalizations. The Department of Veterans Affairs' Care Coordination/Home Telehealth (CCHT) program experienced a *19 percent reduction in the number of hospital admissions, a 25 percent reduction in bed days of care, and a 25 percent reduction in hospital admissions.*
- The New England Healthcare Institute Study updated in 2009 found a *60 percent reduction in hospital readmissions using remote patient monitoring compared to standard care.* The study also showed a 50 percent reduction in hospital admissions using remote patient monitoring compared to disease management programs without remote monitoring. In addition, this study found remote patient monitoring has the potential to prevent between 460,000 and 627,000 heart failure related hospital admissions each year.
- In a study published in the Telemedicine and e-Health Journal in November 2001, entitled *Cost Analysis of Telehomecare*, researchers looked at recertification of patients after 60 days in connection with an acute episode requiring hospitalization for diabetes patients. The researchers found hospitalization costs to be \$87,327 for telehomecare patients and \$232,872 for control group patients.

While it is important to quantify the cost savings of telehealth, it is also important to understand the real-world benefits patients enjoy when using these remote health technologies. This can be best understood through anecdotal examples, which showcase the true benefits of telehealth.

For example, Barbara, one of the participants in Intel's year-long study of families dealing with cognitive decline, is a 61-year old Californian. She was diagnosed with Dementia 5 years prior to the study after having trouble counting change at the store. Today, even setting

the table for dinner, washing her hands at the sink, or turning on the radio can prove impossible for her. In one case, she was observed taking over an hour just to make a cup of tea. Her husband notes it is the highlight of her day when she can come down and fix a warm beverage by herself. Once she could no longer manage some of these everyday activities, Barbara, like others, became worried that she was on the verge of institutionalization.

Inspired by Barbara's story and many others like her, Intel researchers built a laboratory prototype that might someday help her to carry out everyday activities and stay in her own home for as long as possible. The system uses inexpensive wireless sensors to detect movement in the kitchen - or whether anyone has opened the cabinets where the tea cups are kept. The computer waits as long as possible for an individual to remember to get something to drink, but once it reaches a certain threshold of concern, the assistant software locates and prompts the senior, first with a television commercial for tea and finally with an explicit textual prompt on the TV.

Importantly, the system waits again to see if the individual needs help making tea to avoid prematurely replacing an individual's capacity to act on his own. If the individual is slow to start opening cabinets or moving the teapot, the system finally uses the kitchen television to ask if help is needed. If the individual answers, "yes," the system proceeds to support and monitor the progress, offering video instructions only of the steps missed (e.g., picking a mug from the cabinet, finding a tea bag, pouring the hot water, or adding the sugar).

Research into intelligent systems that can help people, such as Barbara, continue to perform everyday activities may provide enormous returns on the investments. Individuals may have the satisfaction of remaining independent and active in their own homes; the costs of long term care may be reduced through delayed admission into more expensive care facilities; these systems may provide some brief respite for family and friends who today must pay constant vigil to their loved ones, often while working full-time jobs; and these systems may be able to reveal nuanced changes in an individual's everyday abilities that physicians can use to better track and treat cognitive or chronic conditions, as they progress.

3.0 Health IT Use Drivers & Barriers

3.1 Strengths and Barriers

To ensure telehealth is used in a way that promotes patient health and produces the maximum cost savings, Intel notes the need for up-front broadband investments in network upgrades and technology capacity in addition to new networks for rural areas where no broadband exists. We have noted the capacity requirements above and believe investments in infrastructure that will meet these standards are needed to ensure consistent and complete patient monitoring. If these investments are not made, the quality of service and network lag times could potentially undermine the reliability of remote patient monitoring. Telehealth produces real savings and promises patient independence, but these benefits cannot be achieved unless the infrastructure needed to support its use is deployed and in place.

Standardized technologies and health care processes must also be employed. Through the HIT initiatives funded by American Recovery and Reinvestment Act (AARA), the Office of the National Coordinator is currently addressing similar issues of standardization. By the end of the year, the Department of Health and Human Services (HHS) is expected to release a rule, which will establish certification standards, implementation specifications, and certification criteria for HIT. While some adjustments may need to be made for specific issues relative to telehealth, the foundation set forth in the rule will help to standardize technologies used in the health care industry. Without uniform architecture or processes, no investment in broadband for telehealth will prove fruitful. These systems must be interoperable in order to capitalize on the known benefits of telehealth.

Additionally, non-unified patient records systems will present problems for telehealth and remote patient monitoring. This is an initial hurdle, which will dissipate as the country moves towards a more consistent use of electronic health records. However, these records will need to be standardized initially to ensure that providers can speak to and understand each other when using electronic systems.

There will be many privacy and security issues raised by the use of remotely collected data transmitted by cell and broadband networks and ultimately stored by third parties. Policies and standards to protect this information from data breaches must be developed. Congress recognized the importance of privacy and security when it included changes to the Health Information Portability and Accountability Act (HIPAA) in ARRA. The HIT Policy and Standards Committees, created under ARRA, have also noted the importance of addressing security and privacy issues. The issues raised and addressed by these Committees will be applicable to the use of telehealth and remote patient monitoring technologies. In addition, the FCC should identify privacy and security issues that are especially pertinent to telehealth and remote patient monitoring technologies.

Intel also notes that there are a wide range of problems around the legal framework that underpins usage of health technologies outside of clinical spaces. The issues include cross-state licensure, security payment reform and reimbursement, and FDA approval for in-home devices.

In an article, entitled "Mapping Telehealth Clinical Trials in Europe," the authors included the chart below, which highlights telehealth adoption barriers:

Technology	Acceptance	Financing	Organization	Policy and legislation
1. Support e.g. User support during deployment & long term	1. Attitude e.g. get users involved in design & fit to usual work patterns	1. Investment e.g. lack of investment beyond trials	1. Intramural e.g. impact of telemed system within organization	1. Legislation Simply not in place
2. Training e.g. of all who interact with system	2. Evidence-base RCTs a requirement	2. Maintenance e.g. lack of agreed tariffs	2. Extramural e.g. impact on relations with other organizations	2. Standardiz'n Globally accepted standards required to ensure quality & uniform practice
3. Usability e.g. all users comfortable with devices & simple to operate	3. Diffusion Telemed needs to be generic & leading champions stimulate interest	3. Operation e.g. Cost-effectiveness studies required & division of costs	3. Protocols No agreed protocols, no attempts to fit with existing protocols /work practices	3. Security Security should support the trust/confidentiality relations between Dr & patient
4. Quality e.g. tech problems, malfunctions				

Somerville, Claire, Prendergast, David, Tarling, Alex, "Mapping Telehealth Clinical Trials in Europe". *PRiE Telecare in Europe Series, Intel White Paper, July 2009, p. 24.*

The provision of home health services to home-bound Medicare beneficiaries in need of skilled care helps to keep them out of hospitals and other institutional care settings. Use of remote monitoring, or home telehealth, for home health patients allows home health agencies (HHAs) to continuously monitor the condition of their patients, rather than gathering information only during periodic in-home visits. Thus, the HHAs can quickly notice changes in a patients' health status and make appropriate changes in their care to avoid more serious, adverse incidents. Demonstration and research projects have shown that in the home health sector, the use of home telehealth provides quality care while reducing costs, particularly for hospitalizations.⁴

Although home health is a logical sector for use of home telehealth, a recent survey found that only 17 percent of HHAs use some type of home monitoring system. The largest agencies (those with over \$6 million in annual revenues) were more likely to use home telehealth (32 percent) than the average agency.⁵

Although outside of the FCC's jurisdiction, it is important to note the legislative and regulatory changes needed for the implementation of telehealth. For example, the Medicare home health payment system could increase use of home telehealth, leading to better care and improved efficiency. Currently, Medicare does not recognize a home telehealth visit as a home health visit. Rather, Medicare regulations define a home health visit as "an episode of personal contact with the beneficiary by staff of the HHA."⁶ This definition is based on language in Section 1861(m) of the Social Security Act that defines home health services as "provided on a visiting basis in a place of residence." This definition of a home health visit effectively provides a disincentive to use of home telehealth.

Thus, Intel believes that the primary barrier to the adoption and use of telehealth is the lack of reimbursement and payment methodologies that would enable and encourage its proliferation.

⁴ Max E. Stachura and Elena V. Kasanshina. *Telehomecare and Remote Monitoring: An Outcomes Overview*. Available at www.advamed.org.

⁵ Philips National Study on the Future of Technology and Telehealth in Home Care. April 2008. Available at: <http://www.philips.com/HomeCareStudy>.

⁶ 42 CFR 484.48(c).

The lack of a cohesive payment policy for telehealth has resulted in fragmentation and variation in health care processes, which has caused scale problems. Varied reimbursement policies for telehealth also create problems for interoperability and continuity of care. To maximize the use and benefits of telehealth, it is important to encourage the use of telehealth by all providers. Reimbursement could be the chief driver promoting telehealth adoption.

The health care system needs to adapt and restructure to cope with the logistical and economic burden of caring for aging populations living with chronic illnesses longer. While HIT is revolutionizing the way in which health can be provided, it also promises to make the home a preferred place of care. The barriers to this evolution in health care need to be addressed by a consistent and coherent federal policy to incorporate telehealth and remote patient monitoring into the overall health care delivery system.

The Federal Government has created de facto barriers through a lack of inter and intra-agency coordination and education about efforts to fund initiatives and serve patients through telehealth. For example, the FCC funds specific efforts related to infrastructure through its Universal Fund. The Health Resources and Services Administration (HRSA) provides grants to increase the use and access to telehealth services for underserved populations, including those in rural areas, underinsured, uninsured, and enrolled in Medicaid. HRSA also funds grants to increase quality of care and assist in determining and spreading best practices in telehealth. The Agency for Healthcare Research and Quality (AHRQ) has invested millions of dollars since 2004 in promoting health IT in all forms, including telehealth and remote patient monitoring. *However, the Centers for Medicare and Medicaid Services (CMS) has yet to embrace reimbursement for telehealth services in a way that would spur the use of these services and make telehealth and remote patient monitoring commonplace.* With limited health care dollars available, CMS's reluctance is understandable as the agency must provide stewardship of taxpayers' dollars as well as be concerned that telehealth and remote patient monitoring will improve quality and outcomes. However, because of the Medicare program's reach within the health care delivery system, Medicare reimbursement for remote patient monitoring could prove to be a significant driver in the adoption of telehealth.

HRSA, AHRQ and the Veterans Administration, have conducted a patchwork of demonstration and pilot projects that have yielded valuable experience and data for telehealth and remote patient monitoring within a variety of populations. Yet, this data and experience has not been translated into a coherent policy across agencies to integrate telehealth into and promote its widespread use throughout the entire health care system. Federal reimbursement policy can significantly impact and enhance integration and spur appropriate utilization.

As an interim step, CMS should create an advisory committee composed of experienced thought leaders from both the provider community from manufacturers of telehealth and remote patient monitoring devices in order to ensure the development of products that will be viable on the market as well as in sync with providers' experience and needs. This advisory committee could work with CMS to reduce barriers, including reimbursement, and help shape a long-term view of how telehealth and remote patient monitoring can enhance care, increase patient satisfaction, and ultimately save dollars.

In recognition of the reimbursement problem, Representatives Thomas (D-CA), Stupak (D-MI), Terry (R-NE), and Johnson (R-TX) introduced the Medicare Telehealth Enhancement Act of 2009 (H.R. 2068), which in Section 104 allows coverage of telehealth services in the home health sector under certain conditions. For example, home telehealth services must be ordered as part of a plan of care certified by a physician and cannot substitute for in-person home health services ordered by a physician. The provision also establishes standards for when a home telehealth visit can be considered equivalent to an in-person visit. Intel supports this legislative language and believes it should be incorporated within a final health reform bill.

3.2 Reimbursement and Payment Reform

In addition, Intel notes current opportunities for making real changes to the delivery system rather than mere changes in payment and reporting. From the beginning, Intel has been

involved in the health reform debate and has advocated the integration of technology through remote monitoring and telehealth into the major Medicare reform proposals.

Intel believes virtual care should be incorporated into a number of the health reform provisions. To reduce costs and improve quality, Intel has made the following recommendations during the **health reform debate**:

- Congress should cover home telehealth under the home health PPS with specific conditions, including that such services cannot substitute for an in-person visit ordered by a physician.
- Virtual care for chronic disease should be added to the list of qualified activities for reimbursement under transitional care. Virtual care for chronic disease would not replace in-person care, but would augment care management by providing frequent updates on clinical measures and health behaviors and allow exchange of health information, including health education, between visits. Virtual care links patients and providers in a way that improves both clinical care management and self-management of chronic disease.
- Inclusion of remote monitoring and telehealth in pilot programs to be conducted by the new CMS Innovation Center should remain in the final bill. Intel also urges that the steps from the pilot to benefit be accelerated as the evidence mounts for new systems of care.
- Where bundled payment is used, ensure that it includes process measures involving the use of virtual care, where medically appropriate, to reduce readmissions. The readmission and bundling policies are aimed at incentivizing hospitals and other providers to better coordinate care and care transitions between the hospital and post-acute settings.

- The health care system should transition from a fee-for-service payment system to payment for Chronic Care Management Teams. Chronic Care Management by Accountable Care Organizations (ACOs) and Independence at Home teams are essential reforms that will benefit patients and leverage the health care teams through the use of technology.

A common argument against virtual health care is that telehealth and remote patient monitoring could be used to skimp on direct care, which is particularly harmful for frail, chronically ill, elderly patients. Intel notes that telehealth and remote patient monitoring are not meant to be a substitute for direct patient care. However, these technologies offer the provider and caregivers the opportunity to monitor more frequently (daily) and thus respond to changing patient conditions on a real time basis. In fact, studies have shown remote patient monitoring can supplement in-home visits. *AHRQ funded one such study in New Mexico in 2007 and demonstrated that a home health program supplementing in-home visits with ongoing remote monitoring and telehealth contributed to a reduction in hospitalization rates among congestive heart failure patients and led to greater nurse productivity and high rates of patient satisfaction.*

Intel believes that telehealth should be included throughout the health reform legislation currently being considered by Congress as an option, which doctors can prescribe as one element to prevent readmissions. To ignore the potential for these technologies because of fears of inappropriate use is short sighted and overlooks the many studies documenting the reductions in emergency room use, hospital readmissions, and nursing home admissions. New care models are essential to serve the growing numbers of chronic disease patients and elderly and through health care reform, Congress needs to equip providers with options to design and direct new care plans using the technology resources available now.

3.3 Recommendations for USG to Drive Health IT

In order to address some of the key barriers to telehealth adoption and use, Intel makes the following recommendations:

- Make *home* broadband adoption for all Americans a top priority in the FCC's National Broadband Plan.
- Extend broadband internet connectivity to those homes that do not have it, especially in rural parts of the country, to enable new independent living and home health care solutions.
- Expand Universal Service Funds to include broadband funding for broadband service and hardware (e.g., PCs) to enable remote health monitoring and target in-home health care applications in determining the most efficient incentives for adoption.
- Subsidize broadband service and hardware (e.g., PCs) for individuals suffering from chronic disease and/or aspiring to retain independent living in their homes consistent with FCC Lifeline requirements.
- Create a sustainable government mechanism that brings together the multiple, fragmented agencies and associations who deal with aging and underserved health care issues to identify top needs and priorities that technologies should address to improve the care of all seniors and chronic disease patients.
- Establish payment reform for telemedicine, assistive devices, home monitoring and aging-in-place systems that have proved to increase the quality of care for seniors while also reducing costs. These reforms must extend beyond trials and pilots and be scaled to nationwide benefits.
- Include long term care/aging services providers and interests in the conversation about the development of the national health information infrastructure. As mentioned previously, one mechanism to do this would be an advisory committee at CMS to help foster a dialogue between thought leaders in this area and the agency in order to create a shared long term view and policy concerning telehealth.

- Explore innovative technological approaches to automating the record keeping and reports that aging services providers must complete for local, state, and federal agencies
- Develop cross-agency funding initiatives and an advisory panel incorporating agencies, such as the National Institutes of Health (NIH), the National Science Foundation (NSF), the Defense Advanced Research Projects Agency (DARPA), the National Institute of Standards and Technology (NIST), Centers for Medicare and Medicaid Services (CMS), the Agency for Healthcare Research and Quality (AHRQ), the Centers for Disease Control and Prevention (CDC), the Health Resources Services Administration (HRSA), the Office of the National Coordinator for Health Information Technology (ONC), and the FDA for research and implementation that promote prevention, early detection, improved compliance, and caregiver support. The panel should publish best practices and findings for medical community to use as guidance as well as help avoid duplication and identify areas in which policy questions need to be addressed.
- Develop plan for 10,000 homes to participate in independent living tech pilots, which would be phased in over five years and conducted in a manner similar to past Framingham research. The pilots would need to: (i) include large sample sizes for clinical, scientific, and financial validation; (ii) review the onset and progression of fairly rare age-related diseases; (iii) be composed of a mix of participants who reside in rural, urban, suburban, desert, coastal, and mountainous areas; (iv) include participants representing a socio-economic mix; (v) include seniors in a range of housing options (e.g., home, assisted living, village), and; (vi) include patients with varying health statuses and diseases from active elders to very frail.
- Streamline the FDA device application process for in-home technology products and develop a new framework for evaluating these products. As technology evolves, FDA must have the ability to evaluate these products through new models.

- Remove perceived and actual liability barriers to companies and universities conducting research and development in home health and independent living solutions.
- Develop a licensure category for virtual assistants to provide telemonitoring review, education, and evaluation for patients.

3.4 Trials

Intel believes that requiring CMS to conduct studies is a failed strategy. For example, in Section 223 of the Benefits Improvement and Protection Act of 2000, Congress directed HHS to conduct a study, which CMS never did. The text of this section can be found below:

(d) STUDY AND REPORT ON ADDITIONAL COVERAGE-

(1) STUDY- The Secretary of Health and Human Services shall conduct a study to identify--

(A) settings and sites for the provision of telehealth services that are in addition to those permitted under section 1834(m) of the Social Security Act, as added by subsection (b);

(B) practitioners that may be reimbursed under such section for furnishing telehealth services that are in addition to the practitioners that may be reimbursed for such services under such section; and

(C) geographic areas in which telehealth services may be reimbursed that are in addition to the geographic areas where such services may be reimbursed under such section.

(2) REPORT- Not later than 2 years after the date of the enactment of this Act, the Secretary shall submit to Congress a report on the study conducted under paragraph (1) together with such recommendations for legislation that the Secretary determines are appropriate on care.

As referenced earlier in these comments, many studies and pilot programs have been funded and implemented. What has not occurred is a systematic incorporation of the information learned from those studies and pilot programs into a policy that takes the delivery of care through telehealth and remote patient monitoring to the next level.

3.5 Barriers to Telehealth Infrastructure Build out for the Indian Health Service

According to the 2000 Census, 57 percent of American Indian and Native Alaskans (AI/NA) reside in urban areas while 43 percent reside in rural areas. The Indian Health Service (IHS) population is younger with a higher unemployment rate (2000 Census Data found the median age is 25 years as compared with 35 years for all races). The current population utilizes health care in a manner similar to the commercial population. Most AI/NAs utilize either Indian Health hospitals or clinics staffed and supported through the federal government and/or tribal organizations, or they draw upon commercial provider services. The AI/NA population is considered to have the highest population of uninsured—with numbers reported at 27 percent of the group overall. The IHS staffs approximately 45 hospitals and 60 other clinical facilities, providing coverage for about 1.9 million of the 3.3 million AI/NAs living in the US. Health statistics for AI/NA are in some cases 3 times the national averages across all rates.

Intel believes the barriers for direct service clinics as compared to those for the self-governance tribal areas are very similar. The Indian Health Services' model for telehealth follows the commercial marketplace—their provider base is currently reimbursed for hospitalized patients receiving face-to-face care rather than for utilization of home care and alternate care delivery models. Thus, the lack of resources (for support, infrastructure expansion) and reimbursement (for enhanced business models) are the most significant barriers. Given the unique nature of the Indian Health Services, and the chronic diseases that are prevalent in the Native American population, like diabetes, IHS should develop models of care to allow telehealth and remote patient monitoring to be incorporated into its care delivery system. The Rural Telemedicine Enhancing Community Health (TECH) Act of 2009 (S. 2741), introduced by Senator Tom Udall (D-CO) addresses this issue as it extends reimbursement to IHS facilities piloting behavioral health treatments via telehealth. The bill also includes a number of other telehealth-related provisions.

3.6 Barriers to Connecting Seniors

Adoption rates for seniors continue to lag behind other groups. According to the Pew Internet & American Life Project, 55 percent of homes had adopted broadband by April 2008, up from

just 42 percent in March 2006.⁷ In April 2008, half of those between the ages of 50 and 64 had broadband at home while only 19 percent of those 65 and over had broadband at home. The study also showed that only 35 percent of seniors use the internet.⁸ With 15 percent of seniors living in rural areas compared with just 12 percent for the general population,⁹ the study found that rural seniors generally have less income, lower educational attainment, and a higher dependence on social security income.¹⁰

The U.S. Internet Industry Association (USIIA) concludes lack of demand and adoption rather than lack of availability are the chief areas of concern for rural broadband efforts.¹¹ Would health care applications drive adoption for this age group? Since the vast majority of adults 65 and over live at home, with only 4.4 percent living in nursing homes,¹² the opportunity to serve this population with broadband applications will empower seniors to remain connected and feel connected. With some 30 percent or 11 million of non-institutionalized seniors living alone,¹³ “studies have found that seniors who master computer skills appear to have fewer depressive symptoms than those who remain technologically unconnected.”¹⁴

As the American Association of Retired People (AARP) recently concluded, 87 percent of seniors prefer to have help provided within their homes while a similar percentage of older adults said they are willing to sacrifice some of their privacy in order to remain at home during their later years.¹⁵ This is a clear indication that bringing health care into the home is a unique solution allowing seniors to remain healthy while maintaining the lifestyle they prefer.

⁷ John Horrigan, *Home Broadband Adoption 2008*, Pew Internet and American Life Project at p. 3, July 2008, available at http://www.pewinternet.org/~media/Files/Reports/2008/PIP_Broadband_2008.pdf.

⁸ *Id.* at 4, 12.

⁹ USDA Economic Research Service, Briefing, *Rural Population and Migration: Trend 6—Challenges From an Aging Population*, available at <http://www.ers.usda.gov/Briefing/Population/Challenges.htm>.

¹⁰ Charles M. Davidson and Michael J. Snatorelli, *The Impact of Broadband on Senior Citizens*, a study commissioned by the U.S. Chamber of Commerce, December 2008, pp 9,10.

¹¹ David P. McLure, *Deployment of Broadband to Rural America*, p. 5, USIIA Report, March 4, 2008, available at <http://www.usiia.org/pubs/Rural.pdf>.

¹² U.S. Department of Health and Human Services, Administration on Aging, *A Statistical Profile of Older Americans 65+*, June 2008, available at http://www.aoa.gov/AoARoot/Aging_Statistics/Profile/2008/docs/2008profile.pdf.

¹³ *Id.*

¹⁴ Charles M. Davidson and Michael J. Snatorelli, *The Impact of Broadband on Senior Citizens*, a study commissioned by the U.S. Chamber of Commerce, December 2008, p. 15 citing *Senior Citizens who Master Computers Have Less Depression*, Aug. 18, 2005, SENIOR JOURNAL, available at <http://seniorjournal.com/NEWS/Aging/5-08-18MasterComputers.htm>.

¹⁵ Linda L. Barrett, *Healthy @ Home*, p. 8, AARP, available at http://assets.aarp.org/rgcenter/il/healthy_home.pdf.

4.0 Data Security in Health IT

4.1 What are the Major Security Challenges?

Intel is committed to strong privacy and security protections for health information. Safeguarding sensitive information is crucial to developing a patient-driven health care system and expanding use of health IT. Consumers and health care providers will only share and use data if they can trust that its privacy and security will be protected.

The security challenges involved with health data are part of a larger set of security issues that Intel and other technology companies are facing. Intel supports several policies in the larger context of critical infrastructure protection. First, Intel recommends that public and private partnerships be established to find solutions to information system and network vulnerabilities and threats. Second, Intel suggests that national and international plans be created to secure information infrastructure, given global interdependencies. Intel supports international harmonization of these plans when possible and practical. Third, Intel recommends that information sharing between and among private and governmental sectors on threats, attacks, vulnerabilities, and countermeasures be strengthened. Fourth, Intel believes there should be an increased focus on critical information infrastructure security analysis (including risk assessment), warning systems, and identification of threats and vulnerabilities. Finally, Intel supports government policies that foster market-driven innovation. Critical infrastructure protection should not lead to government regulations that mandate hardware, software, or processes used by industries deemed part of the critical infrastructure.

Finding more effective and efficient methods to provide health care, while also improving information security, is one of the hard problems our world will face over the coming decades. Intel is committed to working with policymakers to help address these challenges.

4.2 What Level of Health Data Breaches Exist in the Current System?

Although there have been reports of data breaches regarding health information, Intel does not have specific knowledge regarding the level of health data breaches in the current system.

4.3 What Additional Network Demands Do Security Efforts Impose on the System?

An increase in encrypted data being transmitted over the network will create greater needs for broadband connectivity to a greater percentage of the population. Additional network demands should be determined by consulting with network operators and others who would be directly affected by increased data transmission.

4.4 How Might the Means by which Patients Obtain their Medical Information and Populate Personal Health Records (PHRs) be Simplified?

Intel is a member of Dossia, a non-profit organization initiated by a consortium of large U.S. employers for the purpose of creating a national system to deliver Personal Health Records (PHRs) for their employees. In addition to Intel, founding members include large U.S. companies representing over five million employees, including Abraxis Bioscience, Applied Materials, AT&T, BP America, Inc., Cardinal Health, Pitney Bowes, sanofi-aventis and Walmart.

At the employee's request, Dossia gathers health data from both institutional sources (e.g., insurance claims, laboratory, pharmacy, hospital, physician) and personal sources (e.g., health devices, self-entered information, personal biometrics) and facilitates the transfer of electronic copies into the employee's personally controlled health record. Once gathered and securely stored in the Dossia database, the electronic summary of health information is portable. Dossia's intent is to make the PHRs continually available to individuals for life, even if they change employers, insurers, or health care providers.

PHRs empower individuals to take control of their health and reduce medical costs by initiating, maintaining and controlling access to a complete and accurate summary of the health and medical history of an individual. In a November 2008 report issued by the Center for Information Technology Leadership, the potential savings from health care literacy through interoperable online PHRs are projected to be as much as \$21 billion annually on a national level (with an 80 percent usage rate). The ability to inventory test results, as well as access medication lists and renewal schedules, are examples of the efficiencies and improved

quality of care that can be achieved through the individual access to lifelong, portable, private, and secure health records. Improvements to health care quality and effectiveness will come, therefore, not just from increased doctor performance but increased patient performance that can be driven by engaging connected and personal health systems.

The Markle Foundation's Connecting for Health Common Framework for Networked Personal Health Information¹⁶ provides a robust and thoughtful foundation suitable to the governance of consumers' PHR data. We believe the Markle principles, developed through consensus of numerous health care and advocacy stakeholders, should inform any new legal framework and, until new laws or regulations are adopted, should serve as the basis for the design of trustworthy PHRs.

Turning to the question of how consumers can populate their PHRs, under HIPAA, patients have a legal right to a copy of their medical records. In practice, however, this right has often been difficult, and sometimes impossible, to exercise. Many clinicians or hospitals require patients to "come to the basement" for their records, refusing to mail or fax records to patients. Charges for copying are sometimes onerous and excessive, delays are common, and the whole process assumes a paper records paradigm.

In order to make access more meaningful and practical, Congress rightly decided to expand patient access rights in ARRA. Congress directed providers that use electronic health records to give patients electronic copies of medical records. If patients request to have their electronic records sent to a designated entity or person, providers must comply, provided the patients' choice is clear, conspicuous, and specific. While many implementation details must be worked out over time before electronic transmission to patients and their designees is easy and ubiquitous, Congress understood this expanded right would greatly enhance patients' ability to view and manage their medical records and thus better manage their health. We urge policymakers to take a full and robust view of this access right, which will accelerate adoption of PHRs and the drive to the patient-driven model of the health care system.

¹⁶ See www.connectingforhealth.org. See also <http://www.cdt.org/healthprivacy/> which offers many resources on health privacy as well as testimony given before the House Health Committee, discussing, among other things, the fair information principles.

5.0 Universal Service Rural Health Care Support Mechanism and Rural Health Care Pilot Program

The initiatives to increase broadband connectivity for rural health care have yet to bring the benefits to rural America intended by the Universal Service Rural Health Care Support Mechanism (USF) and the 2007 launch of the Rural Health Care Pilot programs. The funding remains tapped at only 15 percent in 2008 (i.e., \$60 million of the \$400 million allocated for the USF funding).

Considering the additional \$7.2 billion that will be released through the National Telecommunications and Information Administration (NTIA) and the Rural Utilities Service (RUS) ARRA programs and the \$235 million allocated under the newly announced HHS Beacon Communities initiative, the funding for rural and underserved communities has increased significantly. Given the ten-fold increase in funds for the two year period, it is crucial that the FCC, HHS, Department of Commerce, and Department of Agriculture coordinate efforts to leverage these funds.

Through the two county examples (Marion, Oregon and Sandoval, New Mexico) for connected care, Intel has offered a template for evaluating current broadband capabilities and overlaying the technical requirements for communities to interconnect their health care institutions, mobile applications, and homes. Intel recommends that through inter-agency coordination, the federal government define criteria, expected outcomes, and timelines for funding a more comprehensive approach to connected health for rural America. Piecemeal grants to providers or stand alone non-profits will miss the opportunity to transform rural communities into sustainable centers reaching their geographically dispersed communities.

Intel makes the following specific recommendations in order to increase broadband usage for rural health care: